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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/545,834	04/10/2000	Shuhei Harada	Q58793	3167

7590 07/15/2003
Sughrue Mion Zinn Macpeak & Seas
2100 Pennsylvania Avenue NW
Washington, DC 20037-3202

EXAMINER

TRAN, LY T

ART UNIT PAPER NUMBER

2853

DATE MAILED: 07/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/545,834

Applicant(s)

HARADA ET AL.

Examiner

Ly T TRAN

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-70, 72 and 75-88 is/are pending in the application.
- 4a) Of the above claim(s) 2, 3, 6-32, 42-65 and 75-79 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1, 4, 5, 33/5, 33/1, 34-41, 66, 70 and 72 is/are allowed.
- 6) ☒ Claim(s) 80-83 and 88 is/are rejected.
- 7) ☒ Claim(s) 84-87 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of species in Paper No. 11 is acknowledged.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 80-82 and 88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terasawa et al. (USPN 5,126,766) in view of Hoen et al. (USPN 6,318,851).

Terasawa et al discloses:

- An ink jet recording head having nozzle orifices from which ink drops are ejected (Column 4: line 24-25);
- An ink storage unit for storing ink to be supplied to the recording head (Column 4: line 22-24);
- An ink flow passage communicating the ink storage unit and the recording head (Fig.1: element 60);
- A valve unit for opening/closing the ink flow passage ((Fig.1: element 52);

However, Terasawa et al. fails to teach a valve control chamber, a flexible diaphragm, which constitute a bottom wall of the valve control chamber and an actuation body for deforming a center portion of the diaphragm in a direction perpendicular thereto, valve control chamber has an entrance port formed on a top wall thereof at a portion where is away from the center portion of the diaphragm and an exit port formed on the top wall, the entrance port is arranged below the exit port and the actuation body is a rod member.

Hoen et al. teaches a valve control chamber (fig.4), a flexible diaphragm (Fig.4: element 149) and an actuation body (Fig.4: element 171,177) valve control chamber has an entrance port (element 145) formed on a top wall thereof at a portion where is away from the center portion of the diaphragm and an exit port (element 143) formed on the top wall (Fig.1), the entrance port (element 145) is arranged below the exit port (element 143) and the actuation body is a rod member (element 171, 177).

It would have been obvious to one having ordinary skill in the art to have a valve control chamber, a flexible diaphragm, as taught by Hoen et al in the invention of Terasawa et al. The motivation of doing so in order to provide a complete fluidic seal that prevent any external leakage of fluid from the valve.

3. Claims 83 is rejected under 35 U.S.C. 103(a) as being unpatentable over Terasawa et al. (USPN 5,126,766) in view of Hoen et al. (USPN 6,318,851) as applied to claim 80 above, further in view of Burr et al. (USPN 5,455,615).

The combination of Terasawa and Hoen fails to teach the exit port is tapered such that the diameter of the port is reduced toward above.

Burr teaches the exit port is tapered such that the diameter of the port is reduced toward above (Fig.13: element 216U, Column 15: line 43-46).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teaching reference to have a tapered exit port as taught by Burr. The motivation of doing so is to reduce the ink flow rate.

Allowable Subject Matter

4. Claims 1, 4, 5, 33/5, 33/1, 34-41, 66, 70 and 72 are allowed.
- The primary reason for the allowance of claims 1, 4, 33/1, 34-41 and 66-68 is the inclusion of the limitation of an ink jet recording apparatus and a method comprising the air valve always closes the air hole while the suction pump decompresses the internal space of the capping unit. It is limitation found in each claims, as it is claimed in the combination, that has not been found, taught, or suggested by the prior art of record which makes these claims allowable over the prior art.
 - The primary reason for the allowance of claims 5, and 33/5 is the inclusion of the limitation of an ink jet recording apparatus comprising the valve unit opens the ink flow passage after a first predetermined time period elapses since the starting of the decompressing by the suction pump. It is

limitation found in each claims, as it is claimed in the combination, that has not been found, taught, or suggested by the prior art of record which makes these claims allowable over the prior art.

- The primary reason for the allowance of claims 69, 70 and 72 is the inclusion of a cleaning method for an ink jet recording head comprising the step of holding the decompressed stated for a first predetermined time period and opening the ink flow passage by the valve unit after the first predetermined period has elapsed. It is limitation found in each claims, as it is claimed in the combination, that has not been found, taught, or suggested by the prior art of record which makes these claims allowable over the prior art.

5. Claims 84-87 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 84-87 are allowable over prior art of record because at least prior art have not been found to anticipate or teach the combination of claim 80, 81 and the diaphragm includes an annular convex on the center portion thereof for sealing the exit port when the diaphragm is deformed by the actuation body.

Response to Arguments

6. Applicant's arguments with respect to claim 80 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's argument that the combination of Terasawa and Wu does not disclose the amended limitation such as the center portion of the diaphragm closes only the exit port of the valve control chamber is persuasive but is moot in view of Terasawa and Hoen et al.

With respect to the general remarks in page 10, Applicant indicates that claims 1-88 are all pending, this is not correct because the claim 71 has been cancelled by the amendment filed on April 3, 2003. Also, claim 73 depend on claim 71 and claim 74 indirectly depend on claim 71, therefore, claims 73 and 74 also cancel.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Terasawa et al. (USPN 4,893,138) discloses when the pump is activated, the communication valve is on (Fig.6), however, the communication valve is on before the pump is activated which is not the same as the present invention (in the present invention, the pump is activated for a predetermined of time then the valve is on).
- Hilton (USPN 5,691,753) discloses when the pump is activated to create a lower pressure cause the ink flows (Column 5: line 61-67, Column 6: line

1-3). However, Hilton still does not teach the pump is activated for a predetermined of time then the valve is on as the present invention.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ly T TRAN whose telephone number is 703-308-0752. The examiner can normally be reached on M-F (7:30am-5pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on 703-308-4896. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0967.



June 27, 2003



Stephen D. Meier
Primary Examiner